Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Office of Engineering and	)	
Technology Seeks Comment On	)	ET Docket No. 19-48
Modifying the Equipment Authorization	)	
Rules to Reflect the Updated Versions	)	
Of the Currently Referenced	)	
ANSI C63.4 and ISO/IEC 17025	)	

Comments of Cisco Systems, Inc. and Intel Corporation

Introduction

Cisco Systems, Inc. and Intel Corporation ("Joint Filers") thank the Commission for the opportunity to comment on updating the Code of Federal Regulations references to reflect the current versions of ANSI C63.4 and ISO/IEC 17025. The Joint Filers rely heavily on the Commission's rules in operating and calibrating their individual onsite test facilities, as well as in ensuring products meet emissions requirements for unintentional radiators to be offered for sale. The Joint Filers are also active in standards organizations and seek to maintain ISO accreditation for on-premises test labs. We support the incorporation of ISO/IEC 17025 into the Commission's rules, and while we do not oppose the incorporation of ANSI C63.4a-2017, we believe the Commission must act to provide alternative measurement procedures that reflect actual practices for labs working to certify unintentional radiators.

As a general matter, we commend the Commission for taking the initiative to update regulations to reflect updates to the standards that govern measurement for unintentional radiators and calibration requirements for test facilities. Specifically, the Joint Filers fully

support the introduction of the accreditation requirements defined in ISO 17025. As the Commission noted, the 2017 version of the ISO standard, including its performance-based requirements, provides greater flexibility in addressing processes, procedures, documented information and organizational responsibilities relative to the prior version of the standard. We therefore support the update to the Part 2 rules to reference the new ISO/IEC standard 17025.

While the Joint Filers do not oppose the proposed incorporation of ANSI C63.4a-2017 in light of the Commission's rules long-time citation to ANSI C63.4, we believe the Commission must act to provide test labs an alternative to the amendment, as the new standard imposes new and uncertain requirements that may have substantial and adverse impacts on entities operating test labs. In particular, the new standard potentially affects manufacturers of unintentional radiators that perform testing in-house, whose concerns are not reflected in the amendment. In our view, the amended ANSI C63.4a-2017 should have more narrowly addressed an ambiguity in the prior standard in a way that is more consistent with actual test lab practice. The Joint Filers also recommend, below, a longer transition from the existing ANSI C63.4-2014 standard to the 2017 amendment.

Discussion

The reason ANSI C63 decided to amend its 2014 standard was in reaction to a long-standing ambiguity in the standard dating back to at least 2000. The language at issue implies that for alternative test sites, such as semi-anechoic chambers (SAC), these facilities could not be used for testing equipment taller than 1.5 or 2 meters based upon limitations with the NSA (Normalized Site Attenuation) validation process.[1] During this entire period, however, it has

[1] ANSI c63.4:2014, Clause D.3

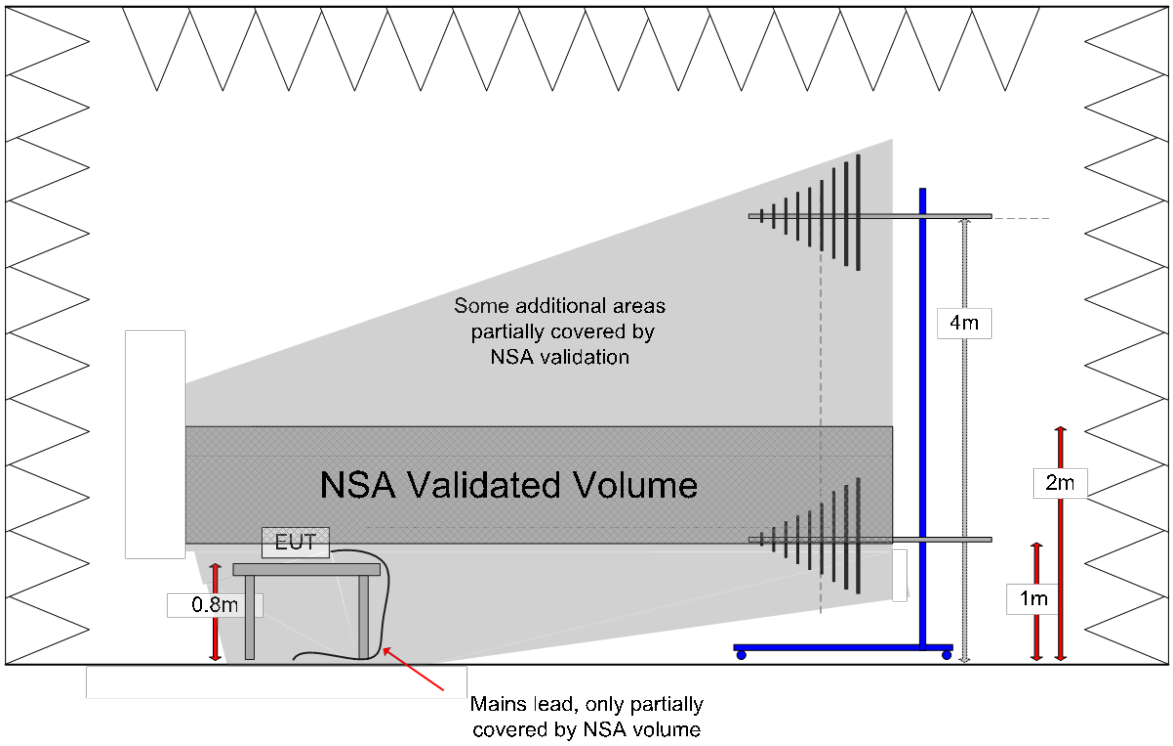
been the EMC industry practice (supported by accreditation) that it is acceptable to test equipment which is taller than 2 meters in such facilities. It is important to note that we are not aware of any EMC issues arising based upon the industry's test practices. The absence of issues highlights the initial scope of the problem that ANSI C63 members should have been attempting to solve – a standards ambiguity that did not impact actual measurement practice.

As a practical matter, for those entities dealing with Equipment Under Test (EUT) of greater than 2 meters in height, test chamber performance has always been validated over the range of 1 to 2 meters. In addition, with the requirement[2] to scan the receiving antenna over the range of 1 to 4 meters to cover the reflective wave, chamber designers are essentially forced to apply a cover to absorb emissions such that areas outside the validation volume have also been effectively covered. This includes the area below 1 meter in height.[3]

The NSA process, however, validates a defined area (as per the diagram below) for an EUT of 1,5 - 2 meters in height, as well as additional areas that are only partially covered. Partially covered areas occur due to the reflection of emissions off of the ground plane and the interaction of the absorber with these reflected signals. The grey area within the diagram, below, shows additional areas where the impact of the reflection off the ground plane will have an impact, including below 1 meter.

[2] ANSI c63.4:2014, Clause D.3

[3] The area below 1 meter has very limited direct validation, with only parts of validation antennas being placed within this zone, although it is extremely common for EUT to have elements within this area.



Additional areas covered by NSA measurement

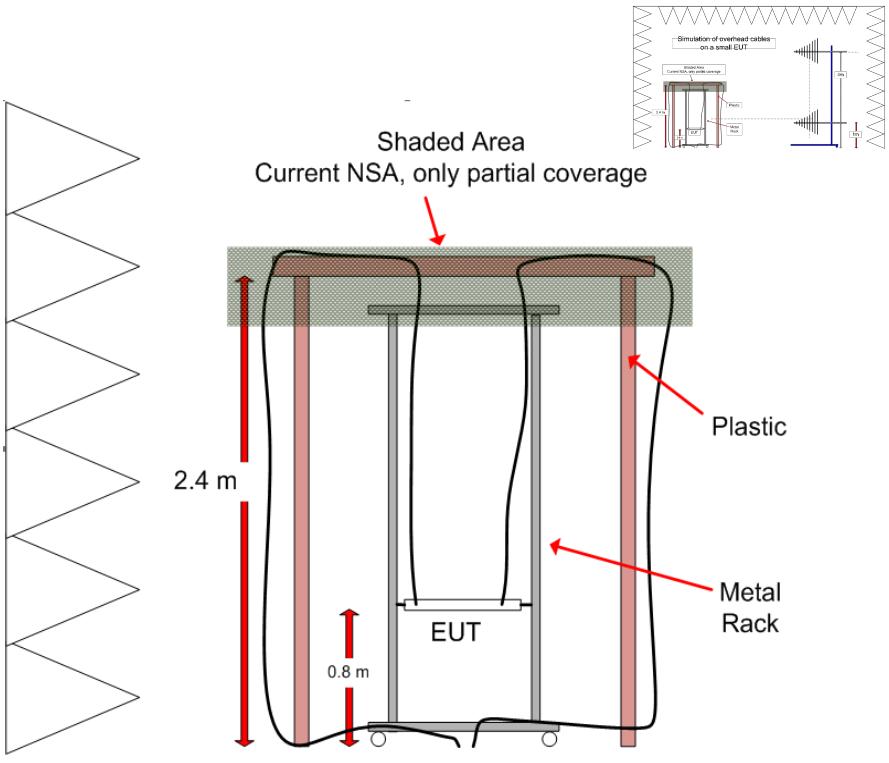
These partially covered areas do have a significant impact on overall chamber performance and the actual EUT measurement.

To clarify the validation to be performed when evaluating EUT of greater than 2 meters in height, the C63.4 group simply adjusted the area which needs to be covered by the NSA validation. For example, for a 3-meter EUT, the rectangle representing the area totally covered by the NSA validation would increase, by raising the height of the top of the dark grey square above, while keeping the lower edge at the same height. The problem with this approach is that it ignores completely the areas that are already partially covered. Nor does the new methodology address validation below 1 meter.

Unfortunately, there was no work done in C63.4 to evaluate how this new method would impact actual measurements, current chamber design, antenna calibration requirements or

process issues. As discussed below, the Joint Filers believe that there are material impacts that may be adverse to the ability of labs to perform the required measurements.

Amendment's impact on actual emissions measurements may be insignificant. There was no investigation of whether this improvement actually made a different to measurements on real EUTs. Moreover, the discussion focused on massive video screens or similar large equipment but not small rack-mounted equipment and/or the simulation of overhead racks, which are similarly subject to the amendment. For a rack-mounted EUT, when simulating overhead cabling,[4] testing would be performed with the cables extended above the unit to more effectively simulate the potential emissions at lower frequencies. Under the amendment, the area totally covered by the NSA validation method includes the cabling extended above, whereas pre-amendment, this area was considered partially covered.



[4] ANSI c63.4:2014 clause 6.2.6, ANSI c63.4:2014 Figures 12 and Figures 13

In the view of the Joint Filers, it is highly unlikely that emissions directly from the shaded area will have a significant impact on the actual measurement. The record created in defining the amendment offers no support to the contrary.

The current chamber design may be substantially impacted by the amendment. In the amendment drafting process, there was little to no investigation into the actual performance of existing chambers. Industry may be faced with major redesigns, costing millions of dollars.

We note that the impact of these changes apply to independent EMC labs as well as manufacturer-based facilities. Independent labs may have to change their business model and if the changes are severe, may require further investment. At this point it is difficult to understand the direct impact. Manufacturers have a similar choice. Going forward it may limit access to the necessary facilities and hence will increase costs.

Antenna calibration requirements and process problems. Even if major redesigns are not required, many laboratories now have to recalibrate their NSA antenna, update their processes and battle the unknown. A requirement to recalibrate the NSA antennas assumes that the calibration laboratories can perform this new process and that it is covered by their accreditation. In addition, any change in processes will introduce unknown consequences. Many test laboratories do these measurements in-house. New processes will be required to ensure that the labs effectively support the new requirements and it is not known if there will be any impacts on their own accreditation, a major source of concern.

Moreover, the number of devices to be tested above 2 meters, relative to the entirety of devices subject to C63.4 testing, is quite small. The amendment itself assumes equipment will

not exceed 3 meters in height. In the view of the Joint Filers, the resolution of the ambiguity in the standard was apparently intended to resolve test procedures for a narrow set of industrial devices subject to Supplier Declaration of Conformity (SDoC) rules, and for which there was not and is not a crying urgency to clarify test procedures. But in the process, C63.4 has crafted an amendment that sweeps within it a broader class of EUT, such as rack mounted EUT with cabling, creating uncertainty and potentially causing severe impacts on in-house testing.

Proposed Solutions

Cisco supports the use of international and nationally developed standards for compliance testing. However, under Commission rules alternative test procedures have always been accepted upon proper documentation. The devices in question are being tested in accordance for compliance to Part 15.107 and Part 15.109 under the SDoC process. As such, the Joint Filers support the establishment of alternate test methods for devices above 2 meters tall or for setups simulating overhead cables,[5] as long as the results are traceable to compliance to the EMC limits as referenced. Cisco would encourage the FCC lab to reach out to develop some alternative guidance via the KDB process while we bring the issue up during the future revisions of the C63.4 standard.

A partial solution would be to simply exclude from the NSA requirements defined with the amendment any exposed cabling above the 2-meter minimum height requirement within the NSA volume, when testing in accordance with ANSI c63.4, Clause 6.2.6, where the active elements within the rack system are below 2 meters.

[5] ANSI c63.4:2014 clause 6.2.6, ANSI c63.4:2014 Figures 12 and Figures 13

Conclusion

Whatever ambiguity was present in ANSI C63.4- 2014, the 2017 amendment does not necessarily provide an effective solution. We are concerned that this amendment introduces more problems than it solves, and raises significant uncertainty for costs and lab certification. As a result, Joint Filers urge the Commission to permit alternative testing, such as the solutions highlighted above.

In addition, we recommend a very long transitional period (for example, more than two years) so that the laboratories impacted by the amendment can investigate the impacts of the amendment, validate the solution, and make any physical changes necessary. In the interim, we suggest that measurements of taller equipment are allowed within alternative sites where the NSA has been limited to 2 meters, as reflects industry practice today.[6]

[6] C63 could have taken this approach with a very simple amendment stating this and making a note that these requirements are under study and would be dealt within the next re-write.

The Joint Filers thank the Commission for the opportunity to address this outmoded rule via the Biennial Review process and look forward to working with the Office of Engineering and Technology and interested parties to address amendments to the rule.

Respectfully submitted,

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